

**For each question, you need to find the answer and show your work. Each problem is worth 3 points: one for the correct answer and two for showing your work. For some problems, you may just need to write out how you know you have the correct answer.**

1. Simplify:  $(8x^2 + 4x - 5) + (-6x^2 - 7x + 3)$

2. A television screen is in the shape of a rectangle. If the length is  $(6x + 4)$  inches and the width is  $(5x - 1)$  inches, how many more inches is the length than the width?

3. In a right triangle, the length of the hypotenuse is  $(7a - 1)$  cm. The length of each leg is  $(3a + 5)$  cm. Write an expression for the perimeter of the triangle and simplify.

4. Find the product:  $(6e^3)(-4e^4)$

5. Find the quotient:  $\frac{12x^2 - 8x}{-2x}$

6. A tank holds  $(x^2 + 3x)$  gallons of water. Write an expression for the capacity of the tank in quarts and simplify. (Hint: How many quarts are in a gallon?)

7. A total of  $(p^3 - 3q + r)$  tiles is needed to cover the floor of a room. Write an expression to describe the number of tiles needed for  $2p$  rooms and simplify.

8. During one week, a movie theatre sold an average of  $(30r + 5)$  tickets per show. There were  $(4r - 1)$  shows. Write an expression for the number of tickets sold during the week and simplify.

9. There are  $(21x^2 - 14x)$  days until the end of the year. How many weeks are there until the end of the year? (Hint: How many days are in a week?)

10. A store sold  $(12y^2 + 18y)$  pounds of apples in  $3y$  days. What was the average number of apples sold per day?

**Open-Ended Question: Make sure as you answer the open-ended question that you show your work AND explain how you know you are doing the correct work. YOU MUST EXPLAIN WHAT YOU ARE DOING!!!**

A truck weighs  $(15a + 17)$  pounds.

A. How many pounds of cargo can be added to the truck to bring it to its maximum legal weight of  $(21a - 50)$  pounds?

B. If the maximum legal weight is 6,250 pounds, what is the value of  $a$ ? What is the weight of the truck when it is carrying no cargo?